

AMENDMENTS TO THE SPECIFICATION:

Page 1, please add the following new paragraphs before paragraph [0001]:

[0000.2] CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4] This application is a 35 USC 371 application of PCT/DE 03/02703
filed on August 11, 2003.

[0000.6] BACKGROUND OF THE INVENTION

Please replace paragraph [0001] with the following amended paragraph:

[0001] ~~Prior Art~~ **Field of the Invention**

Please replace paragraph [0002] with the following amended paragraph:

[0002] The invention is ~~based on a~~ **directed to an improved** high-pressure pump for a fuel injection system of an internal combustion engine ~~as generically defined by the preamble to claim 1.~~

Please add the following new paragraph after paragraph [0002]:

[0002.5] Description of the Prior Art

Please replace paragraph [0003] with the following amended paragraph:

[0003] One ~~[[such]]~~ high-pressure pump ~~[[is]]~~ known from German Patent Disclosure DE 198 29 548 A1. ~~This high-pressure pump has a drive shaft and at least one pump element with a pump piston driven in a reciprocating motion by the drive shaft. The drive shaft has~~ **having** a shaft segment embodied eccentrically to its pivot axis, and a ring is rotatably supported on this portion. The pump piston is braced on the ring via a support element. The rotary motion of the drive shaft is converted into a reciprocating motion of the pump piston via the ring, which does not rotate jointly with the drive shaft. In the contact region between the ring and the support element, high forces occur because of the pressure generated by the pump piston. To further reduce fuel consumption and emissions in internal combustion

engines, increasingly high pressures in fuel injection are needed and must be generated by the high-pressure pump. As a result, the load on the components of the high-pressure pump and the wear to the ring and the support element both increase. Moreover, for reducing emissions, new fuels are being developed that in particular contain little sulfur, but the lubricating properties of the fuel are worsened as a result. For this reason, under some circumstances it is no longer possible to assure that the high-pressure pump will have a sufficiently long service life.

Please replace paragraph [0004] with the following amended paragraph:

[0004] ~~Advantages of the Invention~~

SUMMARY AND ADVANTAGES OF THE INVENTION

Please replace paragraph [0005] with the following amended paragraph:

[0005] The high-pressure pump of the invention ~~having the characteristics of claim 1~~ has the advantage over the prior art that the wear resistance of the ring and the support element is improved to such an extent that the high-pressure pump attains a sufficiently long service life even when very high pressures are generated and when the fuel has only little lubricating action.

Page 2, please delete paragraph [0006].

Please replace paragraph [0007] with the following amended paragraph:

[0007] ~~Drawing~~ **BRIEF DESCRIPTION OF THE DRAWINGS**

Please replace paragraph [0008] with the following amended paragraph:

[0008] One exemplary embodiment of the invention is ~~shown in the drawing and~~ described in further detail **herein below, with reference to the drawings, in which:** ~~in the ensuing description. Fig. 1 shows a high-pressure pump in a longitudinal section. Fig. 2 shows the~~

~~high-pressure pump in a cross section taken along the line II-II in Fig. 1; Fig. 3 shows a detail, marked III in Fig. 2, of the high-pressure pump with a first version of microscopic indentations; and Figs. 4 through 6 show further versions of microscopic indentations.~~

Please add the following new paragraph after paragraph [0008]:

[0008.2] Fig. 1 shows a high-pressure pump in a longitudinal section;

Please add the following new paragraph after paragraph [0008.2]:

[0008.4] Fig. 2 shows the high-pressure pump in a cross section taken along the line II-II in Fig. 1;

Please add the following new paragraph after paragraph [0008.4]:

[0008.6] Fig. 3 shows a detail, marked III in Fig. 2, of the high-pressure pump with a first version of microscopic indentations; and

Please add the following new paragraph after paragraph [0008.6]:

[0008.8] Figs. 4 through 6 show further versions of microscopic indentations.

Please replace paragraph [0009] with the following amended paragraph:

[0009] ~~Description of the Exemplary Embodiment~~

DESCRIPTION OF THE PREFERRED EMBODIMENT

Please replace paragraph [0010] with the following amended paragraph:

[0010] In Figs. 1 through 6, a high-pressure pump for a fuel injection system of an internal combustion engine, for instance of a motor vehicle, is shown that is embodied as a radial piston pump. By means of the high-pressure pump, fuel is pumped at high pressure, of up to 2000 bar, for instance into a reservoir from which fuel is drawn for injection into the engine. The high-pressure pump has a housing 10, in which a drive shaft 12 is rotatably supported about an axis 13. In the housing 10, at least one and preferably more pump elements 14 are disposed, which are driven by the drive shaft 12. The drive shaft 12 has a shaft portion 16,

embodied eccentrically to its pivot rotation axis 13, on which a ring 18 is rotatably supported. Each of the pump elements 14 has a pump piston 20, which is guided tightly and displaceably in a cylinder bore 22 that extends at least approximately radially to the pivot axis 13 of the drive shaft 12. The pump piston 20 of each pump element 14 is braced with its piston base 21 on the ring 18 via a support element 24. The piston base 21 may be kept in contact with the support element 24 and via it with the ring 18 by means of a spring 26, which is braced on one end on the housing 10 and on the other on the support element 24 via a spring plate 23. The support element 24 may be embodied for instance as a support plate or as a tappet.

Page 3, please replace paragraph [0011] with the following amended paragraph:

[0011] The various pump pistons 20 each define a pump work chamber 28, which by means of an inlet valve 30 opening into the pump work chamber 28 can be made to communicate with a fuel supply in which low pressure prevails. The pump work chamber 28 can also be made to communicate with the reservoir, by means of an outlet valves 32 that opens toward the reservoir. Upon the rotation of the drive shaft 12, the pump piston 20 is driven in a reciprocating motion via the eccentric shaft portion 16 of the drive shaft 12 and via the ring 18, which does not rotate jointly with the drive shaft 12. When the pump piston 20 moves radially inward, it executes an intake stroke, in which the inlet valve 30 is opened, so that fuel flows into the pump work chamber 28, while the outlet valve 32 is closed. When the pump piston 20 moves radially outward, it executes a supply stroke, in which the inlet valve 30 is closed, and the fuel compressed by the pump piston 20 passes at high pressure through the opened outlet valve 32 to reach the reservoir.

Page 7, please add the following new paragraph after paragraph [0021]:

[0022] The foregoing relates to a preferred exemplary embodiment of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.